



# Acting on Climate Change: Extending the Dialogue Among Canadians

A collection of texts in response to

*Acting on Climate Change:  
Solutions from Canadian Scholars*,

a consensus document released in March 2015



Faculty of  
Science



## ABOUT THE ORGANIZATION

# INTERNATIONAL INSTITUTE FOR SUSTAINABLE DEVELOPMENT

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# Climate Investment, Low-Carbon Innovation and Green Industrial Policy

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## Decarbonization and Radical Transformation

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Climate debates are changing. In mid-June 2015, the Pope issued a detailed statement calling for urgent action to address climate change<sup>2</sup>. The same month, G7 leaders urged ambitious action—the cutting of greenhouse gas (GHG) emissions by 40 to 70% by 2050, and complete decarbonization by end of this century<sup>3</sup>. As a member of the G7, Canada later clarified that it viewed this commitment as aspirational.

More surprising than the G7 commitment was the statement of the Saudi oil minister, who, in an interview in the *Financial Times* in June 2015, anticipated that his country—the largest oil exporter in the world—would end all fossil fuel exports by as early as 2040. The energy future, according to the Saudi oil minister, lies in solar and wind<sup>4</sup>.

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<sup>1</sup> Thanks to Brendan Haley and Harsha Singh for their helpful comments and insights especially with regards to industrial policy, as well to Aaron Cosby, Peter Wooders and Mark Halle.

<sup>2</sup> [http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco\\_20150524\\_enciclica-laudato-si.html](http://w2.vatican.va/content/francesco/en/encyclicals/documents/papa-francesco_20150524_enciclica-laudato-si.html)

<sup>3</sup> <http://www.theguardian.com/world/2015/jun/08/g7-leaders-agree-phase-out-fossil-fuel-use-end-of-century>

<sup>4</sup> <http://www.ft.com/intl/cms/s/0/89260b8a-ffd4-11e4-bc30-00144feabdc0.html#axzz3hlbdpxj>

The Saudi minister isn't the lone voice in the energy sector contemplating a dramatic shake-up in world energy markets because of climate change. Among the most interesting of the recent flurry of public statements, petitions and promises is the joint letter of CEOs from the six largest European oil and gas companies—including BP, Shell and Statoil—urging governments to adopt broad-based carbon pricing<sup>5</sup>.

Such statements aren't new, nor is the underlying economic work to support them.

Economists have looked to apply fiscal policies to address environmental externalities stretching back four decades, for example from early work by Solow (1970), Kneese (1970), Wallace and Oats (1979), followed by Repetto, Wilcoxen, Pearce, Nordhaus and others, as well as underlying work by the Organisation for Economic Co-operation and Development (OECD) in the late 1980s and throughout the 1990s. This rich analytic body of work has shown that carbon pricing is the most efficient means to nudge markets to reveal climate truths about

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<sup>5</sup> Please see <http://newsroom.unfccc.int/unfccc-newsroom/major-oil-companies-letter-to-un/>.

the extent and consequences of damaging externalities. Today, carbon pricing is mainstream in economic thought. The International Monetary Fund (IMF)—that most cautious and conservative of all international financial organizations—has for several years concluded that carbon pricing (notably a carbon tax) is the most effective means of addressing GHG emissions.

If carbon pricing isn't new, then its uptake today needs to be both welcomed and viewed with caution. The mere existence of a carbon tax isn't a guarantee that GHG emissions will be reduced to limit a global temperature increase to 2°C—the target governments promised in Copenhagen. Put another way, it is not the existence of the policy instrument that matters. Instead, it is the level of ambition within each policy instrument chosen that does. A carbon tax with modest tax rates may give the impression of action, but will have an equally modest impact on actual emissions in the same way that a weak cap within a cap-and-trade emissions trading scheme or a weak regulatory threshold will be less than what climate science demands.

The IMF clearly suggests that carbon taxes need to be stringent enough to bring about what it calls the "radical transformation" in global energy systems to move beyond fossil fuels toward cleaner, low-carbon energy systems.

### Ambition Matters More Than Instrument

In Canada and elsewhere, much attention has focused on the optimal policy choice to lower GHG emissions, with little discussion of what the actual tax rates will look like besides principled positions to be revenue neutral. While impressive research is underway to adopt carbon taxes specifically, this has prompted surprising infighting between carbon tax advocates and emissions trading. For example, *The Globe and Mail* recently

criticized Ontario's alignment with the Quebec emission trading scheme, arguing apparently without irony that emissions trading was vulnerable to regulatory capture, omitting the thousands of pages of corporate tax loopholes and subsidies that have arisen due to the efforts of lobbyists<sup>6</sup>. The simple point is that any public policy runs the risk of capture by special interests.

Debates about policy choices are important. Yet critiquing all options other than carbon taxes is unhelpful in the real world for at least three reasons. First, the debate implies that first-best taxes are Canada's climate silver bullet to tackle its climate challenges. In the real world, first-best policies in theory are hard in practice. Simon Upton, the head of the OECD Environment Directorate, recently called carbon taxes the "third rail" in many countries, due to the combined forces of low-tax lobbyists and carbon sceptics<sup>7</sup>. In Canada, the federal government commonly links four words together: "job-killing carbon tax."

In most countries, domestic climate policies comprise an array of different policy measures, from the 40 jurisdictions that currently deploy carbon taxes to varying degrees (notably the European Union, the Quebec–California emissions trading scheme recently joined by Ontario), regulatory approaches to emission reductions used, for example, by the U.S. Environmental Protection Agency (EPA) and Environment

<sup>6</sup> <http://www.theglobeandmail.com/globe-debate/editorials/bcs-global-warming-lesson-for-alberta-and-ontario/article25028188/>. The editorial warned that Ontario's cap and trade would lead to the "impulse to misspend—to subsidize well-connected companies, to support favorite industries or to pay for politically popular projects—will be hard to resist."

<sup>7</sup> <http://www.ft.com/intl/cms/s/0/fad8327e-03c8-11e5-a70f-00144feabdc0.html#axzz3hlbdpXjJ>. Upton was quoted in the article thus: "Politically, it's still regarded as a third rail issue: touch it and you are out of office," pointing to Australia's repeal of its carbon tax as one example of lobbying efforts by companies against high carbon taxes.

Canada, mandatory and voluntary energy efficiency standards, third-party certification systems such as product-specific carbon footprints, renewable energy power targets with lock-in purchasing contracts, and public procurement practices that include clean, low-carbon buildings and infrastructure—to name just a few of the mitigation measures in the domestic toolboxes of most countries.

Suggesting that all these approaches should be replaced by a single and comprehensive carbon tax is unfeasible, especially given the enormous positive impacts that efficiency standards are reaping.

Debates about policy instrument are important. Yet in most countries, responses to climate mitigation will be composed of a suite of multiple instruments and approaches. Of greater relevance is ensuring the coherence of different policy choices, including the cumulative impact they must have in clearly mapping out new investment options in clean energy systems. Tax policies clearly are important, but their mere existence won't automatically uncover alternative energy solutions.

Second, supporting market-based approaches like pricing and taxes makes sense when markets work. The magnitude of energy-related market failures is staggering, leaving aside global damages associated with carbon externalities. For example, global oil markets are cartelized. Oil companies are oligopolies. The amount of global subsidies allocated yearly to distort fossil fuel prices is an estimated US\$550 billion, comprising direct payments to both consumption and production. The IMF recently estimated that the combined cost of these subsidy payments, including externalities, is more than US\$5.3 trillion a year<sup>8</sup>.

<sup>8</sup> Coady, D., Parry, I., Sears, L. and Shang, B. (2015). How large are global energy subsidies? International Monetary Fund, <http://www.imf.org/external/pubs/ft/wp/2015/wp15105.pdf>

In Canada, the amount of subsidy support to the fossil fuel sector was estimated to exceed C\$800 million per year in 2012<sup>9</sup>. Although tax breaks for the oil sands were coming down, the 2015 budget saw more tax breaks allocated to the Canadian gas sector (through accelerated capital cost depreciation rates)<sup>10</sup>.

There has been progress to exposing fossil fuel subsidies as a first step to eliminating them. For example, at an IISD-hosted meeting of a group of countries called the Friends of Fossil Fuel Subsidy Reform held during the annual World Bank/IMF annual meetings in April, finance and energy ministers lent their support to a joint communiqué to cut out harmful subsidies<sup>11</sup>. Both the United States and France joined Denmark, Sweden, New Zealand, Costa Rica, Ethiopia and others in pledging to reduce such subsidies. The Canadian federal government recently noted that eliminating these fossil fuel subsidies was also aspirational.

And third, carbon pricing requires strong domestic institutions to design, implement and ensure compliance with either tax or emission trading schemes. In most OECD countries, the black and grey economies are substantial, while many developing countries have weak national institutions to ensure implementation.

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### The Investment Roadmap Ahead

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Given distortions within energy markets coupled with other challenges, the recent letter from the six energy company CEOs is newsworthy not because of the reference to carbon pricing, but rather its reference to

<sup>9</sup> Office of the Auditor General of Canada (2012). Report of the Commissioner of the Environment and Sustainable Development, A Study of Federal Support to the Fossil fuel Sector, [http://www.oag-bvg.gc.ca/internet/English/parl\\_ces\\_d\\_2012\\_04\\_e\\_37713.html](http://www.oag-bvg.gc.ca/internet/English/parl_ces_d_2012_04_e_37713.html)

<sup>10</sup> <http://www.budget.gc.ca/2015/docs/plan/toc-tdm-eng.html>

<sup>11</sup> <https://www.iisd.org/media/communique-launch>

laying out the roadmap for future investment linked to climate policy choices.

The question is whether markets alone can move quickly enough to achieve the "radical transformation" in energy systems, or whether innovation needed to identify clean energy options needs the proactive partnerships of governments to accelerate innovation.

Industrial policy clearly has had a bad rap. Yet industrial policy is alive and well not only in Europe (notably the Nordic countries), but also in China (for example, state-owned enterprises broadly and the huge jump in renewable technologies specifically), Chile (with support to the successful expansion of salmon, grapes and other exports), Brazil (aircraft) and elsewhere<sup>12</sup>.

Industrial policy typically entails a suite of tools that differ within and between sectors and countries. Based on an extensive literature survey, Harrison and Rodriguez-Clair (2010)<sup>13</sup> find that there is an important role for "soft" industrial policy, whose goal is to develop processes for government, industry, and cluster-level private organizations to collaborate on interventions that increase productivity and improve systems for enhancing policy impact and links of production to markets. The focus is on shifting to directly addressing coordination problems that keep productivity low for domestic producers, limit their innovative capacities or abilities to link up with new technologies.

While coherence and policy space matter, it is money that talks. Public finance to spur green

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12 Rodrik, D. (2010). The return of industrial policy, Project Syndicate, <http://www.policyinnovations.org/ideas/innovations/data/000165>

13 Harrison, A. and Rodriguez-Claire, A. (2010). Trade, foreign investment, and industrial policies for developing countries. In D. Rodrik and M. Rosenzweig (Eds.), *Handbook of Development Economics*, Amsterdam, North Holland.

innovation is crucial in the same way venture capital is important. Rodrik (2010)<sup>14</sup> notes that the U.S. Department of Energy alone has provided US\$40 billion in loan guarantees to accelerate a range of green technologies such as wind turbines, solar technologies, the electric car and other technologies. Sustainable Development Technology Canada, supported by the federal government by more than C\$900 million, similarly provides venture capital to support pre-commercialization development of clean technology options. In Alberta, the Climate Change and Emissions Management initiative similarly provides start-up capital to promising clean technologies, with more than C\$400 million in funding from the carbon intensity tax imposed by the provincial government on major GHG emitters.

Rodrik (2014) argues that a "serious debate about the design of industrial policy would bring it out of the shadows and allow it to be carried out in an explicit manner"<sup>15</sup>.

One example of new approaches to Canada's climate challenge is offered by Brendan Haley, who suggests that the transition to a low-carbon economy will require overcoming structural rigidities within energy markets that hinder innovation. Compared to other sectors, the oil, gas and coal sectors are significantly less innovative, when measured by standard indicators like research and development expenditures<sup>16</sup>. Haley argues that the structure of most energy sectors is less conducive to transitional innovation infrastructure networks. Haley thus argues

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14 Rodrik, D. (2010). The return of industrial policy, Project Syndicate, <http://www.policyinnovations.org/ideas/innovations/data/000165>

15 Rodrik, D. (2014). Green industrial policy. *Oxford Review of Economic Policy*, 30(3).

16 Haley, B. (2014). Exploring low-carbon energy transitions in Canada: Natural resource staples, the carbon trap and innovating from a hydroelectric base (Ph.D. thesis), University of Ottawa.

that climate debates need to turn towards the opportunities to link Canada's lead in a number of low-carbon energy systems because of various rigidities such as long-term start costs, high capital-intensive fixed costs including a dependence on large-scale energy systems with its existing industrial structures. Linkages could be forged between structurally rigid and capital intensive systems (like hydro) and more networked and modular energy innovations like electric vehicles and wind.

As Canada and other countries look beyond Paris, the challenge is both to move from examining how to halt GHG emissions as an end in itself, and instead to accelerate zero-carbon energy options that benefit from a longer tradition of purposeful industrial policy that supports and focuses market activity.





## ABOUT THE INITIATIVE

# SUSTAINABLE CANADA DIALOGUES

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This contribution is part of a collection of texts, *Acting on Climate Change: Extending the Dialogue Among Canadians*, stemming from interactions between Sustainable Canada Dialogues, an initiative of the UNESCO-McGill Chair for Dialogues on Sustainability, and business associations, First Nations, non-governmental organizations, labour groups, institutions, organizations and private citizens.

Sustainable Canada Dialogues is a voluntary initiative that mobilizes over 60 researchers from every province in Canada, representing disciplines across engineering, sciences and social sciences. We are motivated by a shared view that putting options on the table will stimulate action and is long overdue in Canada.

Together, the contributions enrich the scope of possible solutions and show that Canada is brimming with ideas, possibilities and the will to act. The views expressed in *Acting on Climate Change: Extending the Dialogue Among Canadians* are those of the contributors, and are not necessarily endorsed by Sustainable Canada Dialogues.

We thank all contributors for engaging in this dialogue with us to help reach a collective vision of desired pathways to our futures.

FOR MORE INFORMATION, VISIT OUR WEBSITE

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